What is claimed is:

5   1.   A method for detecting safe driving behavior in a vehicle, said method

comprising the steps of:

generating sensor data, on said vehicle, that reflects vehicle movement;

processing said sensor data to extract characteristics that reflect frequent lane changes

of said vehicle; and

10   generating a frequent lane change event based on said processed data, said frequent

lane change event indicates frequent lane changes of said vehicle at high-

speeds.

2.   The method as set forth in claim 1, wherein generating sensor data comprises

15   generating sensor data that detects vehicle heading changes.

3.   The method as set forth in claim 1, wherein generating sensor data comprises

generating sensor data that detects angular rate for yaw axis of said vehicle.

20   4.   The method as set forth in claim 3, wherein processing said sensor data

comprises:

extracting points of inflexion from said angular rate data;

determining the slope between said points of inflexion;

determining peak values at said points of inflexion; and

determining time separations between said points of inflexion.

5.   The method as set forth in claim 3, wherein processing said sensor data comprises:

determining whether an absolute value of said yaw rate is greater then a vehicle specific threshold;

if so,

calculating a gradient slope of a yaw rate series;

recording a lane change event;

determining and recording a plurality of lane change events;

calculating a frequency of occurrence and severity for said lane change events; and

if said frequency of occurrence and said severity for said lane change events exceeds a vehicle specific threshold, then record lane change event.

6.   The method as set forth in claim 3, wherein processing said sensor data comprises:

determining whether an absolute value of said yaw rate is greater than a vehicle specific threshold;

if so,

determining whether an absolute value of said yaw rate is greater than a frequent lane change yaw rate threshold;

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if not,

calculating an amount of time elapsed to complete vehicle turn;

recording a lane change event if said time is less than a frequent lane change threshold; and

5   recording a lane change event if at least four lane change entries have been recorded and if said lane change entries are not stale.

7.   The method as set forth in claim 1, wherein generating a frequent lane change event comprises generating a frequent lane change event based on vehicle heading changes.

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8.   The method as set forth in claim 3, wherein generating a frequent lane change event comprises generating a frequent lane change event based on the slope of the angular rate.

15   9.   The method as set forth in claim 1, further comprising transmitting said frequent lane change event from said vehicle to a server.

10.   An event detection module for a vehicle comprising:

at least one sensor for generating sensor data, on said vehicle, that reflects vehicle

20   movement; and

processor, coupled to said sensor, for processing said sensor data to extract characteristics that reflect frequent lane changes of said vehicle, and for generating a frequent lane change event based on said processed data, said

frequent lane change event indicates frequent lane changes of said vehicle at high-speeds.

11.   The event detection module as set forth in claim 10, wherein said sensor for generating sensor data that detects vehicle heading changes.

12.   The event detection module as set forth in claim 10, wherein said sensor for generating sensor data that detects angular rate for yaw axis of said vehicle.

13. The event detection module as set forth in claim 12, wherein said processor further for extracting points of inflexion from said angular rate data, for determining the slope between said points of inflexion, for determining peak values at said points of inflexion, and for determining time separations between said points of inflexion.

14. The event detection module as set forth in claim 12, wherein said processor further for determining whether an absolute value of said yaw rate is greater then a vehicle specific threshold, if so, for calculating a gradient slope of a yaw rate series, for recording a lane change event, for determining and recording a plurality of lane change events, for calculating a frequency of occurrence and severity for said lane change events, and if said frequency of occurrence and said severity for said lane change events exceeds a vehicle specific threshold, then for recording lane change events.

15.   The event detection module as set forth in claim 12, wherein said processor further for determining whether an absolute value of said yaw rate is greater than a vehicle specific threshold, if so, for determining whether an absolute value of said yaw rate is greater than a frequent lane change yaw rate threshold, if not, for calculating an amount of time

5   elapsed to complete vehicle turn, for recording a lane change event if said time is less than a frequent lane change threshold, and for recording a lane change event if at least four lane change entries have been recorded and if said lane change entries are not stale.

16.   The event detection module as set forth in claim 10, wherein said processor

10   further for generating a frequent lane change event based on vehicle heading changes.

17.   The event detection module as set forth in claim 12, wherein said processor further for generating a frequent lane change event based on the slope of the angular rate.

15   18.   The event detection module as set forth in claim 10, further comprising:

a server; and

a transmitter unit for transmitting said frequent lane change event from said vehicle
       to a server.

20   19.   An event detection module for a vehicle comprising:

at least one sensor for generating sensor data, on said vehicle, that reflects vehicle
       movement; and

processor, coupled to said sensor, for generating a frequent lane change event based

on said sensor data, said frequent lane change event indicates frequent lane

changes of said vehicle at high-speeds.

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